

3.18 Air Quality, Odors, Vibrations and Noise

The section will evaluate the potential for off-site impacts caused by emanations from the proposed development.

3.18.1 Existing Condition

Noise

A noise monitoring survey was conducted on the Depot Hill Farm property at dusk on November 2, 2006, between 4:20 pm and 4:40 pm. During the noise survey there was a light, steady north-northwest wind of 1-2 mph. The temperature was between 42° and 44° F, and the humidity was low. Background noise consisted of very low-level automobile traffic sounds coming from all directions. Occasional extraneous noises included migrating geese, nearby horses and a helicopter at the end of the second test. Table 3-75 is a summary of the data collected during each test.

**Table 3-75
Noise Survey Data Results**

	L _{eq} (dBA)	L ₁₀ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)	L _{max} (dBA)	L _{peak} (dB)
Test 1	40.6	42.3	38.1	35.6	57.2	86.2
Test 2	41.7	45.5	39.5	36.7	55.3	88.8

The DEC Program Policy Memorandum, "Assessing and Mitigating Noise Impacts" states on page 20, "A quiet seemingly serene setting such as rural farm land will be at the lower end of the scale at about 45 dB(A)," Evening noise levels are often 10 dBA lower than daytime noise levels. L90 is the sound pressure level (SPL) that is exceeded 90% of the time, and is often used to represent the ambient level, that is the noise level present when extraneous noises, including the sound being studied as well as incidental sounds such as passing cars or birds, are not present. Based on the L90, ambient noise level was determined to be 36 - 37 dBA. Leq is the most common metric used to measure sound, when a single SPL is reported with no other descriptive information, it usually refers to the Leq. With an Leq of approximately 41 dBA, noise levels are consistent with published data for rural areas. During the summer, farm equipment, which can produce sounds in the 85 dBA to 110 dBA range¹ depending on the age and condition of the machines used, and outdoor recreational activities increase noise levels in rural areas, increasing daytime and early evening ambient sounds to levels above 50 dBA. Insects and frogs are seasonal contributors to rural ambient noise as well. Cicadas have calls that can exceed 100 dBA when recorded at close range, which can raise ambient sound significantly in

¹ <http://ohioline.osu.edu/aex-fact/0590.html>

August and early September. In areas with ponds and wetlands, spring peepers can also raise ambient noise significantly.²

Chapter 80 of the Town of Amenia Code pertains to noise, focusing on prohibited noises and their sources. 80-2.A states "The creation of any unreasonably loud, disturbing and unnecessary noise is prohibited. Said noise shall be prohibited when it is of such a character, intensity or duration or of any type of volume that a reasonable person would not tolerate under the circumstances and that is detrimental to the life, health or welfare of any individual or would cause or create a risk of public inconvenience, annoyance or alarm." Construction, demolition and excavation activities are permitted only between the hours of 7:00 a.m. and 9:00 p.m., and noises emanating from private residences or facilities must be inaudible inside any residence between the hours of 9:00 p.m. and 7:00 a.m.

The Town of Amenia Zoning Law, adopted on July 19, 2007, further addresses environmental noise in Section 121-40.C, with more attention given to performance standards than is provided in Chapter 80. Also, the code explicitly states that the point of compliance is at the property line of the site.

No noises shall be emitted in violation of Chapter 80 of the Amenia Town Code. In addition, the following specific standards apply to noise.

1. Sound levels shall be determined at the property line of the lot from which the noise is emitted. Sound measurements shall be accomplished through a sound-level meter having an A-weighted filter and constructed in accordance with specifications of the American National Standards Institute or other generally accepted standard for the measurement of sound.
2. No person, firm or corporation shall allow the emission of sound which, as measured at the property lines, has a sound level in excess of:
 - a. Sixty decibels on the A-weighted scale between the hours of 7:00 a.m. and 8:00 p.m.; and
 - b. Fifty decibels on the A-weighted scale between the hours of 8:00 p.m. and 7:00 a.m.
3. Sounds emitted at levels lower than those prohibited by Subsection(C)(2) above shall not be permitted if, because of the type or frequency of the noise emitted, such sounds are offensive, disruptive or in continual disharmony with the character of an adjoining or nearby residential neighborhood.
4. Exemptions
The following shall be exempt from the noise level regulations:
 - a. Noises not directly under the control of the property user.
 - b. Noises emanating from construction and maintenance activities between 8:00 a.m. and sunset, Monday through Friday.
 - c. The noises of safety signals, warning devices, emergency pressure-relief valves or other emergency warning signals.
 - d. Bells or chimes from a church or other place of worship.

² C&A field monitoring in rural-residential areas, Chatham & Kinderhook, NY, 2002, 2006. Cicadas recorded at levels approaching 85 dBA, August 2006; spring peepers recorded at levels approaching 65 dBA, May 2002.

Air Quality

The Clean Air Act, which was amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment. The clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. The EPA has set NAAQS for six principal pollutants, which are called “criteria” pollutants, they include the following:

**Table 3-76
National Ambient Air Quality Standards
Criteria Pollutants**

Pollutants	Primary Standards	Averaging Times
Carbon Monoxide	9 ppm ¹ (10 mg/m ³) 35 ppm (40 mg/m ³)	8-hour 1-hour
Lead	1.5 ug/m ³	quarterly average
Nitrogen Dioxide	0.053 ppm (100 ug/m ³)	annual
PM ₁₀	150 ug/m ³	24-hour
PM _{2.5}	35 ug/m ³	24-hour
Ozone	0.08 ppm 0.12 ppm	8-hour 8-hour
Sulfur Oxides	0.14 ppm	24-hour

Source: www.epa.gov/ttn/naaqs/co/index.html

Note: 1. ppm denotes parts per million

The Clean Air Act places most of the responsibility on states to prevent and control air pollution. Areas where air pollution levels persistently exceed the NAAQS may be designated “non-attainment”. The Town of Amenia, Dutchess County, New York is not a “non-attainment”-designated area.

A site inspection will be conducted prior to demolition activities to investigate the presence of lead paint, asbestos, etc. However, no contaminants are anticipated in existing on-site structures which would be exposed or caused to be airborne as a result of construction activities, including demolition of structures. In addition, as discussed in 3.1, the hazardous materials environmental site assessment concluded that there are no hazardous materials of concern stored on-site. Structures proposed to be demolished consist of farm buildings constructed in the 1980s, after asbestos and lead paint were eliminated from building systems.

Vibration

There are no known sources of vibration in the project area, in addition, the proposed project will not produce vibration.

Odors

Keane Stud Farm currently stockpiles stable waste on-site at the northwestern corner of the stud farm, adjacent to Depot Hill Road. The stable waste is collected and hauled offsite. Although it is regularly maintained, odors from this stockpile are noticeable to neighboring properties, and are particularly pungent during warm weather.

3.18.2 Potential Impacts

Noise

There are no anticipated permanent noise impacts associated with this project. Upon occupancy, the site is not expected to produce sounds louder than current agricultural activities, and, while on-site noise may increase as a result of residential development, they will not exceed the Zoning Code's thresholds of 60 dBA between 7:00 am and 8:00 pm, and 50 dBA between 8:00 pm and 7:00 am when measured at the property lines. Construction noise will be audible within the vicinity of the site. Construction and maintenance activity will be limited to Monday through Friday, 8:00 am to sunset, as required by the Town of Amenia Zoning Code, Section 121-40.C, which exempts construction noise from the above-mentioned regulatory thresholds. No blasting is proposed for the project. Table 3-77, below, provides a list of some common construction and exterior household or landscape maintenance noise levels.

**Table 3-77
Typical Construction and Residential Noise Levels**

Typical Construction Phase Noise Levels*	
<i>Chainsaws</i>	81 dBA
<i>Backhoe</i>	86 dBA
<i>Bulldozer</i>	80 dBA
<i>Grader</i>	85 dBA
<i>Cement Mixer</i>	71 dBA
<i>Truck</i>	91 dBA
<i>House construction**</i>	89 dBA
<i>Power tools**</i>	115 dBA
Typical Residential Noise Levels*	
<i>Outdoor conversation/recreation</i>	70 dBA
<i>Car starting***</i>	54 dBA
<i>Car door slam***</i>	56 dBA
<i>Generator (assumed "silent" type in good condition)</i>	70 dBA
<i>Leafblower</i>	92 dBA
<i>Lawnmower</i>	92 dBA
<i>Air conditioning unit</i>	70 dBA
<i>Dog barking****</i>	100 dBA
<i>Garbage truck</i>	83 dBA
<i>Light automobile traffic</i>	50 dBA

Indoor conversation | 55 dBA

- * Unless otherwise noted, noise levels cited are widely reported and have been compiled from readily-available publications, including the following:
 - "Noise in Construction." Health and Safety Executive (UK), 10/96. www.hse.gov.uk
 - DEC Program Policy Memorandum "Assessing and Mitigating Noise Impacts," 2000.
 - "Noise Levels in Our Environment Fact Sheet." Noise Center for the League of the Hard of Hearing, 02/01/01. www.lhh.org/noise/decibel.htm.
- ** Noah Seixas, Rick Neitzel, Lianne Sheppard and Bryan Goldman, "Alternative Metrics for Noise Exposure Among Construction Workers" *Annals of Occupational Hygiene*, Vol. 49, No. 6, pp. 493–502, 2005. (Based on Leq for a full shift, noise dosimeters worn by workers.)
- *** Noise levels recorded by C&A in conjunction with PS/21 (Chatham, Columbia County, NY, DEIS and post-occupancy noise review, C&A 2003-2007
- **** "References on BARKING!" <http://www.vetmed.ucdavis.edu/CCAB/barking.html>

Proposed construction of homes in Neighborhoods 1, 2 and 3 is 470 feet or greater from any property line, and is at least 630 feet from any off-site house. On-site roads and Neighborhood 4 are within 10 feet of property lines, and at least 260 feet from off-site residences. Noise levels for heavy construction equipment will typically be between 70 and 90 dBA when measured at a distance of 50 feet from the source.

**Table 3-78
Distances from Site Components to
Sensitive Receptors**

	Distance to nearest Property Line	Distance to nearest Residence
Neighborhood 1	975 ft	925 ft
Neighborhood 2	700 ft	630 ft
Neighborhood 3	470 ft	1,500 ft
Neighborhood 4	10 ft	260 ft
On-site Roads (entrance)	10 ft	300 ft

Perceived sound level drops by 6 dB for every doubling in distance after 50'. If a noise at 50 feet from the source has an SPL of 80, at 100 feet SPL=74, at 200 feet SPL=68, and so on. At a distance of 1,000 feet, the perceived noise would be less than 55 dBA, which is audible, but not generally considered intrusive. Intervening conditions – such as barriers, rough surfaces, and turbulence – cause scattering and attenuation of sound waves, making the SPL decrease even more than would be predicted based on distance alone, however, such conditions cannot be relied upon to decrease SPL in a consistent way. High frequency sounds are readily affected by barriers: their short wavelengths are easily blocked by objects that are roughly the same size as the length of the wave. Low frequency noises are much less affected by the presence of barriers, because their wavelengths are much larger – approximately 1,000 feet for a 1 Hz sound wave, 100 feet for a 10 Hz sound wave and 6 feet for a 200 Hz sound wave. Given typical source noise levels between 60 and 110 dBA at, measured at distances of 50 feet (typical of large-machinery noise measurement practices) and three feet (typical of "arm's-length" equipment such as power tools or lawnmowers and residential noise measurement practices), Tables 3-79 and 3-80, below, demonstrate the reduction of sound at 200, 400 and 600 feet and the approximate distance of assumed sensitive receptors, given different source-sound conditions.

Table 3-79
Noise reduction over distance,
3-foot measurement of source

Distance to Receptor Site (feet)	Change in SPL (dBA)	Source noise level (in dBA, measured at 3 feet)					
		60.0	70.0	80.0	90.0	100.0	110.0
noise level at receptor distance (in dBA)							
1500	-54.0	6.0	16.0	26.0	36.0	46.0	56.0
900	-49.5	10.5	20.5	30.5	40.5	50.5	60.5
600	-46.0	14.0	24.0	34.0	44.0	54.0	64.0
400	-42.5	17.5	27.5	37.5	47.5	57.5	67.5
200	-36.5	23.5	33.5	43.5	53.5	63.5	73.5
10	-10.5	49.5	59.5	69.5	79.5	89.5	99.5

Table 3-80
Noise reduction over distance,
50-foot measurement of source

Distance to Receptor Site (feet)	Change in SPL (dBA)	Source noise level (in dBA, measured at 50 feet)					
		60.0	70.0	80.0	90.0	100.0	110.0
noise level at receptor distance (in dBA)							
1500	-29.5	30.5	40.5	50.5	60.5	70.5	80.5
900	-25.1	34.9	44.9	54.9	64.9	74.9	84.9
600	-21.6	38.4	48.4	58.4	68.4	78.4	88.4
400	-18.1	41.9	51.9	61.9	71.9	81.9	91.9
200	-12.0	48.0	58.0	68.0	78.0	88.0	98.0

- Noise During Construction

Distance will attenuate much of the construction noise, although some sounds will be audible off-site. Because the majority of construction equipment that will be used has typical sound levels between 70 dBA and 90 dBA when measured at distances of 50 feet, construction noise will be significant only when grading and deliveries are taking place near the entrance and in Neighborhood 4. Power-tool use in Neighborhood 4 is also expected to be audible off-site.

- Noise During Operation

The proposed project is not expected to increase noise levels significantly during operation of the facility, largely because of the distance from the proposed construction to adjoining parcels. The loudest noises expected on the site post-construction, during occupancy, would be from farm equipment, which would be comparable to existing noises. As discussed in Section 2.3.1 and throughout the DEIS, the houses will have meadows rather than conventional lawns that require weekly mowing, and the condominium association will be responsible for upkeep and maintenance of the site, and will thus be able to limit use of noisy tools like chainsaws or leaf blowers to acceptable hours, if they are used at all.

Air Quality

The existing air quality in the vicinity of the project is good, and the increase in traffic anticipated during both construction and operation of the facility will not be significant, as discussed in 3.8.2, Traffic. The Applicant has reviewed the requirements of the CAL3QHC model, which is designed to be used to assess carbon monoxide levels at signalized intersections which have traffic levels that exceed the capacity of the roadway. The only signalized intersection in the project vicinity is that of 22/44/343. Based on the traffic analysis in section 3.8.2, the signalized intersection will operate at a level C or D through 2011 with all currently proposed development at full build-out (including Amenia Hills and Silo Ridge). As C and D are acceptable levels of service, the intersection is not operating at or above capacity, thus the CAL3QHC model is not necessary.

During construction, dust will be managed as necessary with water or other dust suppressants. Areas of exposed earth will be minimized, as described in section 3.2 and in the SWPPP.

Because no hazardous materials were found inside, or have been used in the construction of, any of the buildings slated for demolition, none of these materials will be released as a result of demolition.

Traffic impacts from construction are discussed in Section 2.4 and 3.8.2. Waste from construction is discussed in Section 3.12.2, and Sediment & Erosion Control are discussed in Section 3.3.3.

Vibration

Construction activities for the proposed project do not include rock blasting. Based upon information from the Federal Highway Administration (FHWA), construction vibrations are typically below the level that is noticed on adjacent parcels, especially when adjacent properties are more than 50 feet from the construction activity, as proposed for the project. Further, the proposed project does not propose activities adjacent to sensitive structures, or propose construction activities such as pile driving (the largest generator of potential construction vibrations). No vibration occurrences will be created.

Odors

The proposed project's site layout specifically locates residential units away from agricultural and equestrian activities in order to prevent potential odor. The compost storage area will be located within the ring road, between Neighborhoods 2 and 3, at a sufficient distance from residential buildings to minimize odors at the proposed homes. According to Cornell Cooperative Extension, properly maintained compost systems do not create odors. Specific information relating to odors resulting from composting and waste disposal is included in Section 3.12.2, and information relating to odors resulting from wastewater treatment are discussed in 3.16.2.

The composting facility will be located with setbacks in accordance with Section 121-37E.2 of the Town of Amenia's Zoning Code, which stipulates that "agricultural structures containing animals, animal feed, or animal waste shall be set back at least 200 feet from watercourses and from lots that have existing residential uses, whether or not such residential lots are within an agricultural district. This setback requirement shall not apply to pre-existing con-conforming

structures.” The location of the composting facility relative to residential structures and watercourses and the 200-foot buffers can be seen in the Master Development Plan, Figure 1.A. The Applicant has chosen to use the more conservative New York State standards required for separation between residential uses and non-farm composting operations. Based on Part 360 §4.4 (d), Table 3-81, below, provides the minimum horizontal separation distances required for non-farm composting:

**Table 3-81
NYS Required Minimum Setbacks for Non-Farm
Composting Facilities**

	Minimum Horizontal Separation Distance
Property Line	50'
Residence* or Place of Business	500'
Potable Water Well or Supply	200'
Surface Water Body	200'
Drainage Swale	25'
* The landowner's or operator's residence is excluded from this separation distance requirement.	

A distance measurement from the closest dwelling in each neighborhood was taken to make sure the minimum horizontal distances for residences were met. The nearest residence in Neighborhood 1 is 2,907 feet from the composting facility; from Neighborhood 2, the distance is 2,203 feet; from Neighborhood 3, the distance is 1,046 feet, and from Neighborhood 4, the distance is 763 feet. All homes the are farther from composting facilities than the required 500 feet for residences.

3.18.3 Mitigation

Noise

The most reliable noise abatement “measure” employed during both construction and operation is the distance between the clusters of proposed development and any sensitive receptors. Post-occupancy noise levels are not expected to exceed current levels. Additionally, conventional lawn-care practices, such as lawn mowing, leaf blowing, etc. will not occur on the site. Landscape buffers are not proposed, because they provide inadequate noise abatement, unless they involve construction of earthen berms or solid masonry walls. The proposed project is not expected to create notable noise in sound levels from present levels and will not have an appreciable effect on noise receptors.

Air Quality

There is no significant traffic impact, therefore mitigation is not required. Potential temporary construction-related air quality impacts will be minimized with the following measures: fugitive dust control, proper operation of equipment, cleaning/wetting of construction materials, etc.

Vibration

Mitigation is not necessary. No vibration occurrences are anticipated to occur.

Odors

The proposed project's site layout specifically locates residential units away from agricultural and equestrian activities in order to prevent potential odor concerns. In addition, regarding composting, the compost storage area will be located more than 760' from any residences. Proper technique for application of manure will be used and management areas for stored manure will be properly maintained as to attenuate the nuisance of odors.

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